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A NEW SPECIES OF THE GENUS *ACROCYRTUS* YOSII, 1959 (COLLEMBOLA, ENTOMOBRYIDAE) FROM INDIA

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Abstract In this paper *Acrocyrtus cheni* sp. nov. (Collembola, Entomobryidae) was described from India.
Key words Collembola, *Acrocyrtus*, chaetotaxy, India.

Acrocyrtus was established by Yosii, 1959 as a subgenus of *Lepidocyrtus* Bourlet, 1839 for *L.* (*Acrocyrtus*) *malayanus* Yosii, 1959 based on the pointed tubercle at inner side of basal dentes (Yosii, 1959). Yoshii and Suhardjono (1989) raised it to generic level and established three subgenera (*Acrocyrtus*, *Onerocyrtus*, *Carocyrtus*) based on distribution of scales on ventral tube. Here we maintain its generic level in the light of reliability by using dental tubercle, although the monophyly of *Acrocyrtus* was doubted (Christiansen and Bellinger, 1991; Soto-Adames, 2000). This genus is characterized by 8 + 8 ommatidia (G and H smaller or unvisible under light microscope), 4 segmented antennae and apical bulb absent on Ant. Ⅳ, bidentate mucro with or without accessory spinlet, rounded and finely striated scales on body and ventral side of furcula, conical pointed dental tubercles present and spiny setae absent on inner side of dentes. Most members of *Acrocyrtus* are distributed in Southeast Asia, particularly in Singapore, Malaysia and Indonesia. So far, more than 25 species were described around the world and only one species *A. cryptocephalus* Handschin, 1929 was recorded from India, the second one is described in this paper (Handschin, 1929).

The specimens were cleared in lactic acid, mounted under a coverslip in Marc André Ⅱ solution, studied using Leica DM2500 and Nikon 80i microscopes. The photograph was taken with Nikon SM1000 microscope using a mounted Nikon DS-Fi1 camera and enhanced with Photoshop 7.0 (Adobe Inc.), all length data measured with NIS-Elements Documentation 3.1 (Nikon). Dorsal cephalic chaetae designated after Gisin's system (1967), labial palp setae after Fjellberg (1998), labial setae after Gisin (1964), dorsal body chaetotaxy after Szeptycki (1979). 4 paratypes deposited in School of Life Sciences, Nanjing University and others are in School of Life Sciences, Taizhou University.

Abbreviations. Th., thoracic segment; Abd., abdominal segment; Ant., antennal segment; s, sensillum/a; ms, microsensillum/a; mac, macrochaeta (e); mic, microchaeta (e).

***Acrocyrtus cheni* sp. nov.** (Figs 1 – 24)

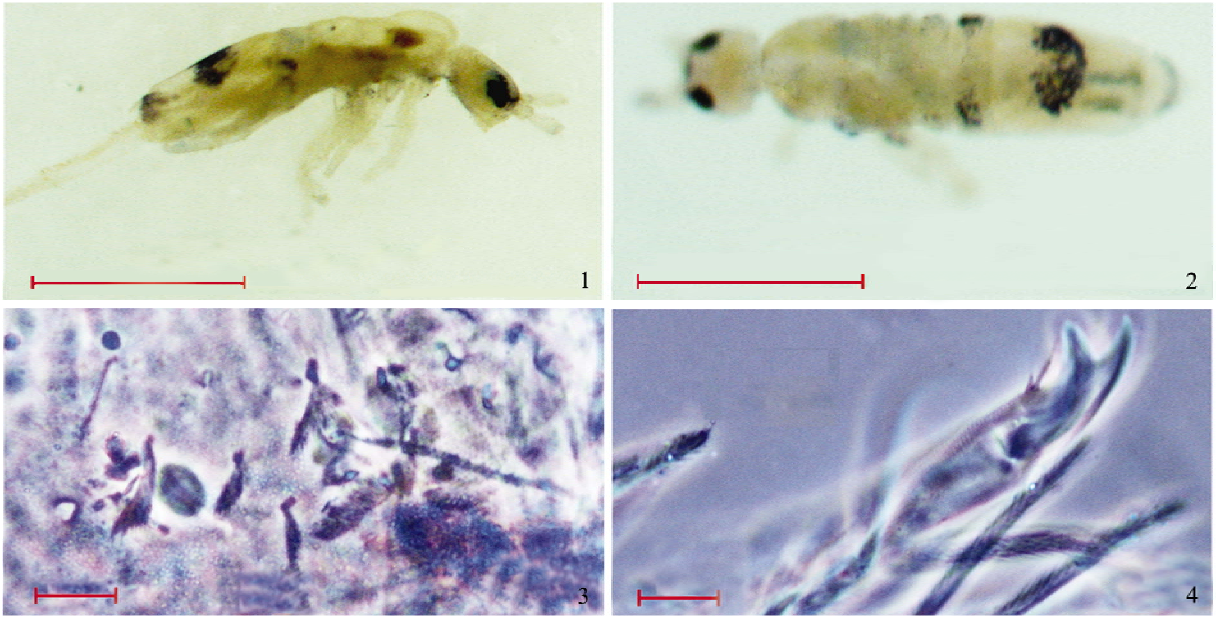
Holotype ♀ on slide, collected number as India-Ⅱ-1, India, Trivananthapuram (Trivandrum), Kerala, Karamana River, collected by T. Chatterjee, Aug. 2005, deposited in School of Life Sciences, Taizhou University. Paratypes 8 females on slide, the same data as the holotype.

Description. Maximum body length 1.32 mm.

Colour pattern. Ground colour pale yellow. A pair of dark patches on lateral Abd. Ⅲ and sometimes weak in some specimens. Median Abd. Ⅳ with a large hemicycle dark patch. Eye patches dark (Figs 1 – 2). Scales hyaline, oval to circular (Fig. 3), and present on head, body tergite and ventral side of furcula.

Head. Ommatidia 8 + 8, G and H smaller than others and sometimes unvisible under light microscope (Fig. 5). Antenna unscaled, 1.62 – 1.92 times as long as cephalic diagonal. Antennal segmental ratio as Ⅰ : Ⅱ : Ⅲ : Ⅳ = 1.00 : 1.26 – 1.52 : 1.93 – 2.01 : 4.00 – 4.35. Basal Ant. Ⅰ with 3 dorsal 1 – 2 ventral spiny setae (Fig. 7), Ant. Ⅱ distal with rod-like s, Ant. Ⅳ without apical bulb. Anterior part of head with blunt setae (Fig. 5). Prelabral and labral setae as 4/5, 5, 4, prelabral setae ciliate and others smooth, labral intrusion deeply V-shaped, labral papilla absent (Fig. 6). Chaetotaxy of labial base as $M_1M_2rEL_1L_2$, all ciliate and r smaller than others (Fig. 8). Labial palp with 5 papillae as A – E, lateral process of labial palp straight, blunt with tip beyond apex of papilla E

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Figs 1–4. *A. cheni* sp. nov. 1. Lateral view. 2. Dorsal view. 3. Body scales and bothriotrichal complex. 4. Mucro. Scale bars: 1–2 = 500 μm, 3–4 = 10 μm.

(Fig. 9). Marginal setae along labial cephalic groove 0s4c (Fig. 10). Subapical seta of the maxillary outer lobe subequal to apical one, 3 smooth sublobal hairs on sublobular plate (Fig. 11). Cervical setae as 9–11 spiny setae, all subequal (Fig. 12).

Leg. Coxa: Ⅰ, 4–5 ciliate mac and 2 pseudopores; Ⅱ, a = 6–10, p = 7–9 ciliate mac and 3 pseudopores; Ⅲ, 7-9 + 3 ciliate mac and 2 pseudopores (Fig. 13). Trochanteral organ with 12–15 smooth spiny setae, 4–6 in ventral 5–7 in posterior arm and 1–3 between them (Fig. 14). Setae on tibiotarsus with tip tapered. Unguis 1 pair inner and 2 lateral teeth, all tiny. Unguiculus truncate and outer edge smooth. Tenent hair clavate, subequal with inner margin of unguis, and slightly longer than unguiculus. Supraempodial seta of inner tibiotaus Ⅲ 0.59–0.71 times as long as unguiculus (Fig. 15).

Ventral tube. Unscaled, anterior face with 7–10 ciliate setae, lateral flap with 5–6 smooth and 3–4 ciliate setae, posterior face without smooth setae (Fig. 16).

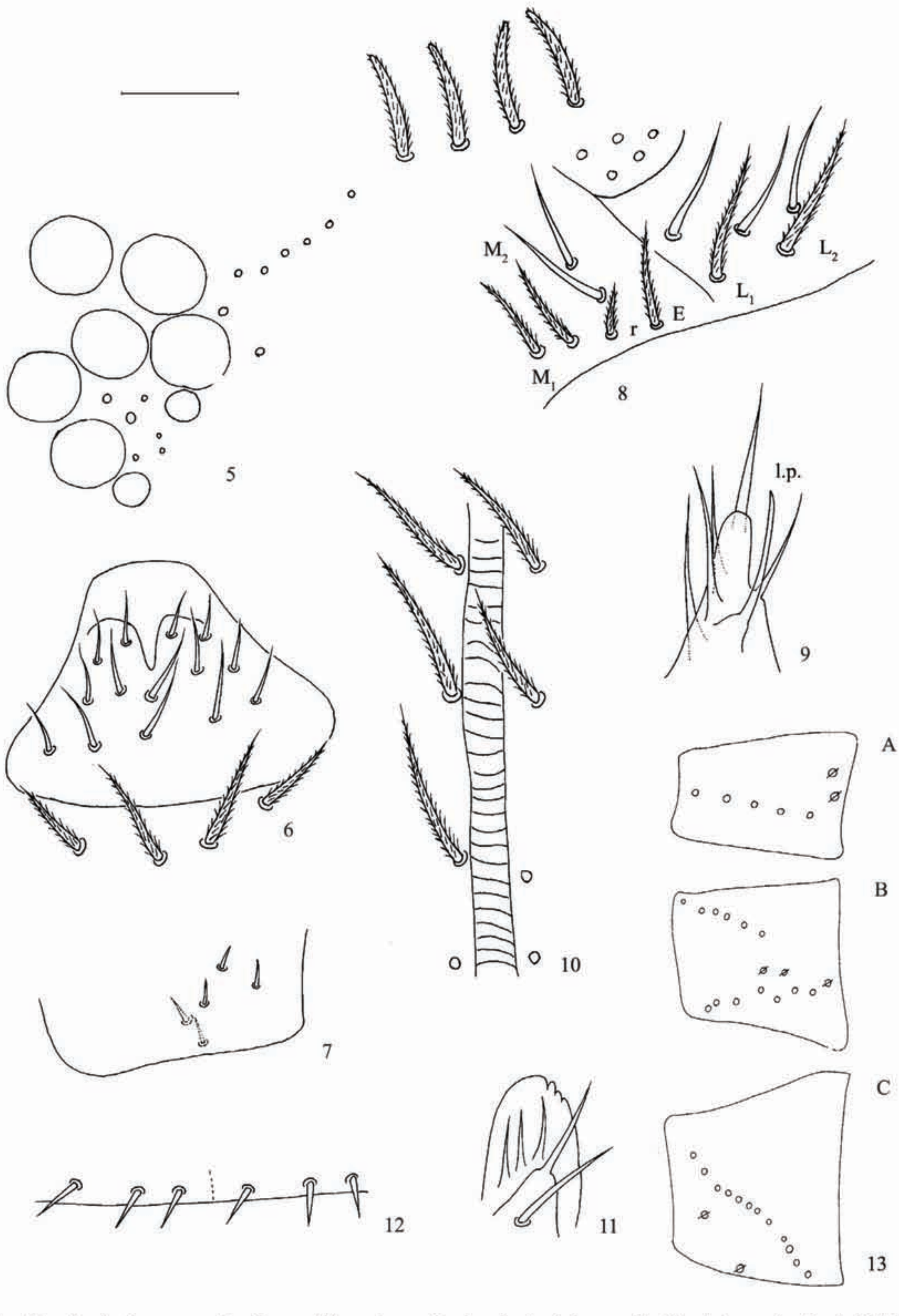
Furcula. Dorsal side with many ciliate and blunt setae, ventral side with scales. Manubrial plaque with 3 inner, 2 outer ciliate setae and 2 pseudopores. Ventral terminal manubrium with 2 + 2 ciliate blunt setae. Dental tubercles conically pointed. Setae on furcula with tip tapered (Fig. 17). Distal smooth part of dentes 1.21–1.33 times as long as mucro. Mucro bidentate, subapcial tooth subequal with apical one, mucronal basal spine short with tip only reaching subapical tooth and with 1 accessory spinlet (Figs 4 and 18). Tenaculum with 4 + 4 teeth and 1 large, multi-laterally ciliate basal seta (Fig. 19).

Chaetotaxy. Body mac as 00/0100 + 3, complete s as 21/11253 and ms as 10/10100. Th. Ⅱ not protruded over head, lateral with 1 s and 1 ms, ms posterior to s, 10 mic (a5, m2, m4, m5, p1–6), all smooth and subequal (Fig. 20). Th. Ⅲ with 1 s external to m7 and ms absent, mic a1–4, a6, m2, m4–6 and p1–6 smooth and subequal, setae a7 and m7 ciliate (Fig. 21). Abd. Ⅰ with 1 ms external to a6, and 12 smooth mic (a1–3, a5, a6, m2–6, p5, p6). Abd. Ⅱ with 1 central s (as), mic mi ciliate and fan-shaped, mic a3, a6, a7, m3e, m4–7, p3–7, p5p smooth and subequal, mic a2, Lm and Li ciliate and with tip expanded, mac m3 ciliate, a2p and ml absent (Fig. 22). Abd. Ⅲ with 1 central (as) s and 1 lateral (d2) ms, mic mi, ml, Li, Lm, Ll and a6 ciliate and fan-shaped, mic im, em and a2 ciliate with tip expanded, mic a3, a7, m3, m7, p3–5 and p7 smooth, setae pm6, m7a and p6 ciliate, morphology of seta am6 unclear (Fig. 23). Abd. Ⅳ with 1 anterior (as) and 1 posterior (ps) common s and 3 elongate median s, mic A3–6, A3p, B3, Be3, C1–4, T1 and D2–3 smooth, mic T3, T5–7, Te7, C1p, D1p, De1, De3 ciliate, morphology and homology of partial lateral setae difficult to determine because of the loss of setae during preparation, mac B4–6 ciliate, mic pi, pe and D1 fan-shaped, 1 additional setae present between D1 and E1 (Fig. 24). Abd. Ⅴ with 3 + 3 s and many ciliate setae. Abd. Ⅳ : Abd. Ⅲ = 3.54–4.51.

Ecology. Among weeds and sediments from river.

Etymology. The new species is named after the famous Chinese entomologist Prof. CHEN Jian-Xiu (Nanjing University, China).

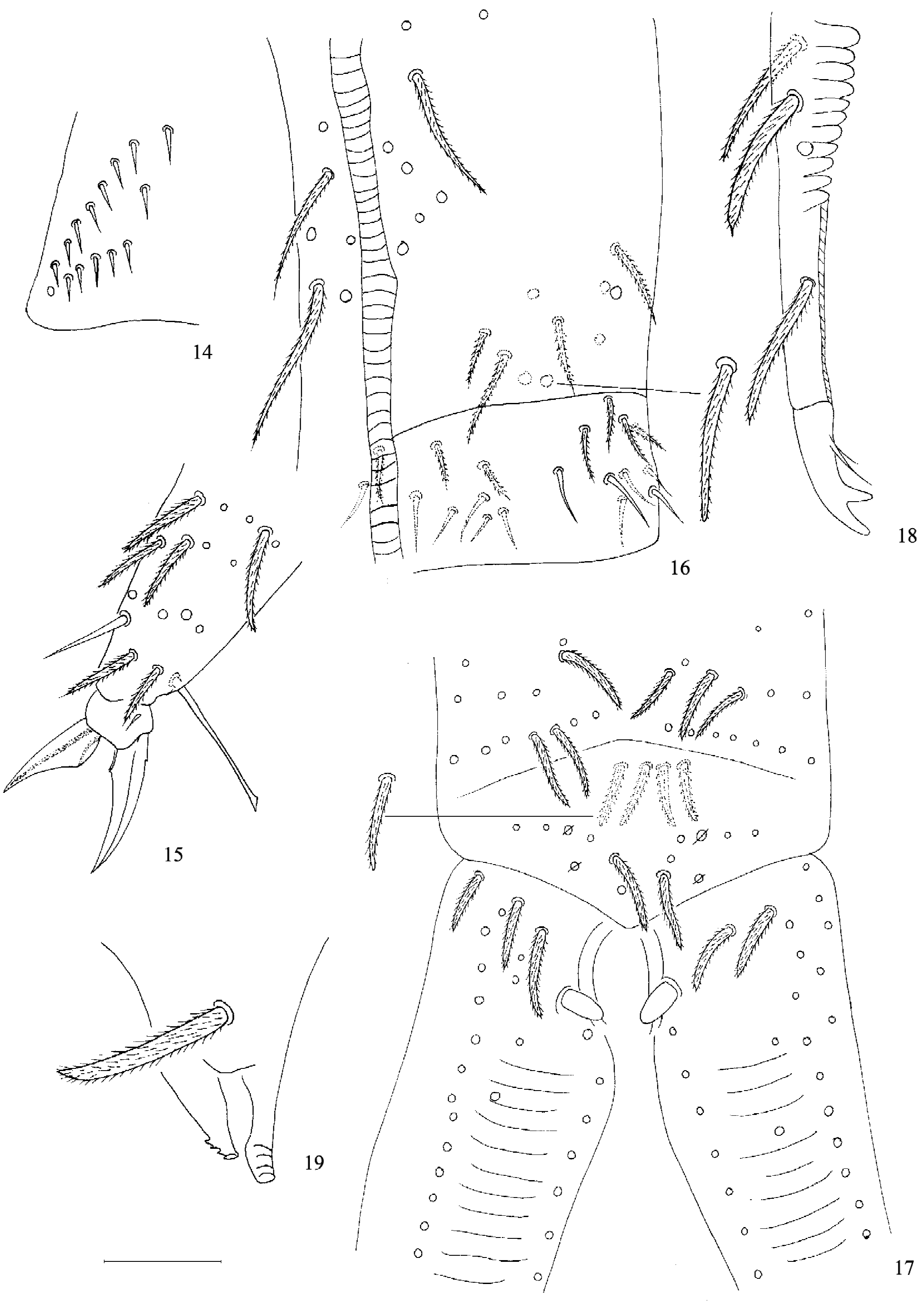
Diagnosis. The new species is characterized by



Figs 5 – 13. *A. cheni* sp. nov. 5. Ommatidia and anterior head. 6. Labrum. 7. Basal Ant. Ⅰ. 8. Labial base. 9. Labial papilla E. 10. Cephalic groove. 11. Maxillary out lobe. 12. Cervical setae. 13. Coxal macrochaetae (A. Fore leg. B. Mid leg. C. Hind leg). Scale bar = 50 μm.

the colour pattern with 1 pair of dark patches on lateral Abd. Ⅲ, and median Abd. Ⅳ with a large hemicycle dark patch, prelabral setae ciliate, labral papilla absent, labial base setae ciliate, mic a2 ciliate and m5 smooth on Abd. Ⅱ, unguis with 1 pair inner and 2 lateral teeth, and unguiculus truncate with outer edge smooth.

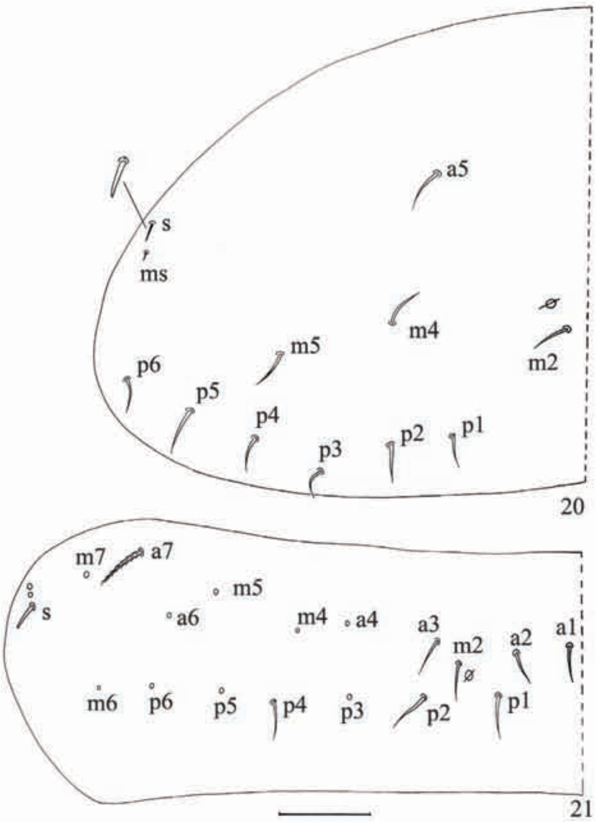
Remarks. *A. cheni* sp. nov. is similar to *A. mastani* Yosii, 1982 in median Abd. Ⅳ dark patch, unscaled antennae and ventral tube, absence of labral papilla and V-shaped labral intrusion. However, it can easily separated from the latter by ciliate seta M on labial base (smooth in latter species), ciliate prelabral setae (smooth in latter species), subequal cervical



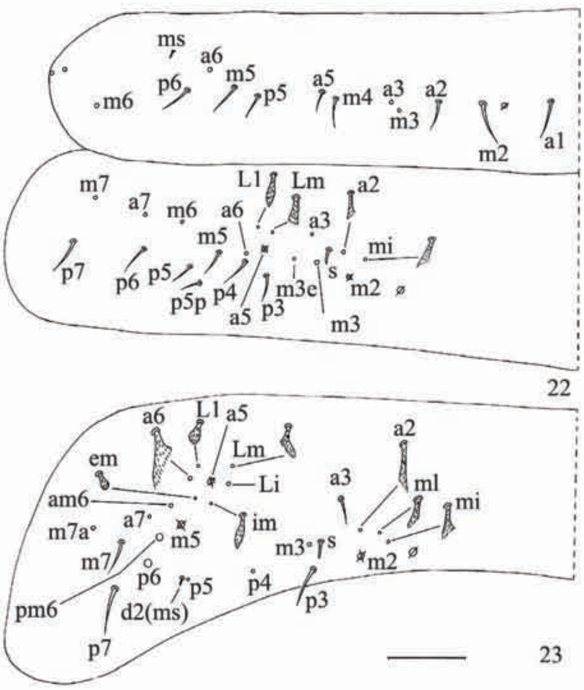
Figs 14 – 19. *A. cheni* sp. nov. 14. Trochanteral organ. 15. Hind claw. 16. Ventral tube. 17. Terminal manubrium and basal dentes. 18. Mucro. 19. Tenaculum. Scale bar = 50 μm.

setae (middle two longer in latter species), 3 smooth sublobal hair on maxillary out lobe (2 in latter species), 12 – 15 spiny setae on inner edge of unguis (60 in latter), 1 pair inner teeth on unguis (3 in latter species) and unguiculus truncate (lanceolate in latter species).

The new species can be easily separated from Indian species *A. cryptocephalus* by colour pattern with dark patch on anterior Abd. Ⅳ (absent in latter species), not protruded Th. Ⅱ (protruded over head clear in latter species), 2 teeth on inner unguis (3 teeth in latter species), maximum body length 1.32 mm (2.5 – 3.0 mm in latter species).



Figs 20 - 21. *A. cheni* sp. nov. 20 - 21. Dorsal chaetotaxy of thorax. 20. Th. Ⅱ. 21. Th. Ⅲ. Scale bar = 50 μm.



Figs 22 - 23. *A. cheni* sp. nov. 22 - 23. Dorsal chaetotaxy of abdomen. 22. Abd. Ⅰ - Ⅱ. 23. Abd. Ⅲ. Scale bar = 50 μm.

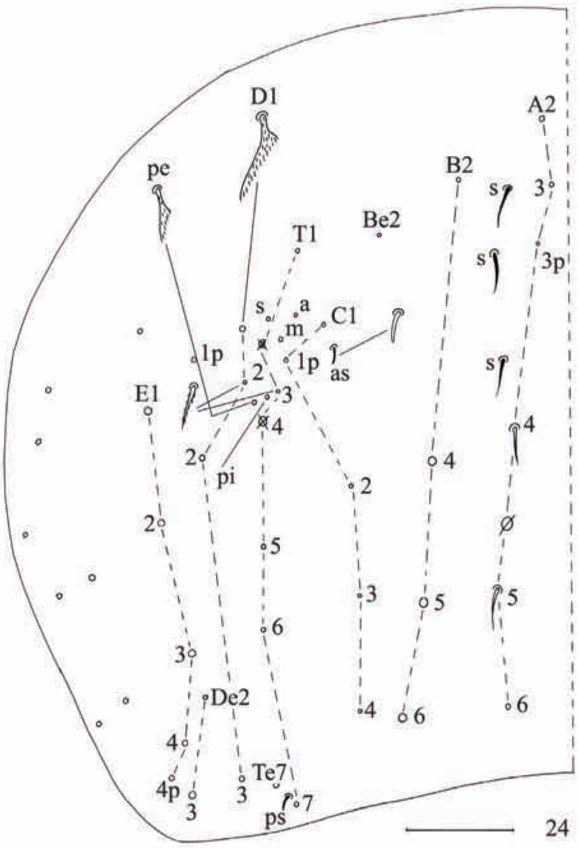


Fig. 24. *A. cheni* sp. nov., dorsal chaetotaxy of Abd. Ⅳ. Scale bar = 50 μm.

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印度尖瘤䖴属一新种（弹尾纲，长角䖴科）

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摘 要 描述尖瘤䖴属 *Acrocyrtus* 印度 1 新种，陈氏尖瘤䖴 *A. cheni* sp. nov.。

尖瘤䖴，陈氏尖瘤䖴，新种 *A. cheni* sp. nov.（图 1～24）

新种的鉴定特征 体色，上唇前缘不具乳突，上唇后缘及下唇基部的纤毛状毛，第 2 腹节的光滑 m5 毛，第 2～4 腹节陷毛周围的扇形保卫毛，大爪具 1 对内侧和 2 个侧面小齿，小爪楔形，腹管后侧仅有纤毛状刚毛以及弹器顶端上的钝头纤毛状刚毛。模式标本保存于台州学院生命科学学院。

正模 ♀，印度喀拉拉邦特里凡得琅喀拉玛那河，2005-08，Tapas Chatterjee 采。

词源：新种以陈建秀教授姓氏命名。

关键词 弹尾纲，尖瘤䖴属，毛序，印度.
中图分类号 Q969.14

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